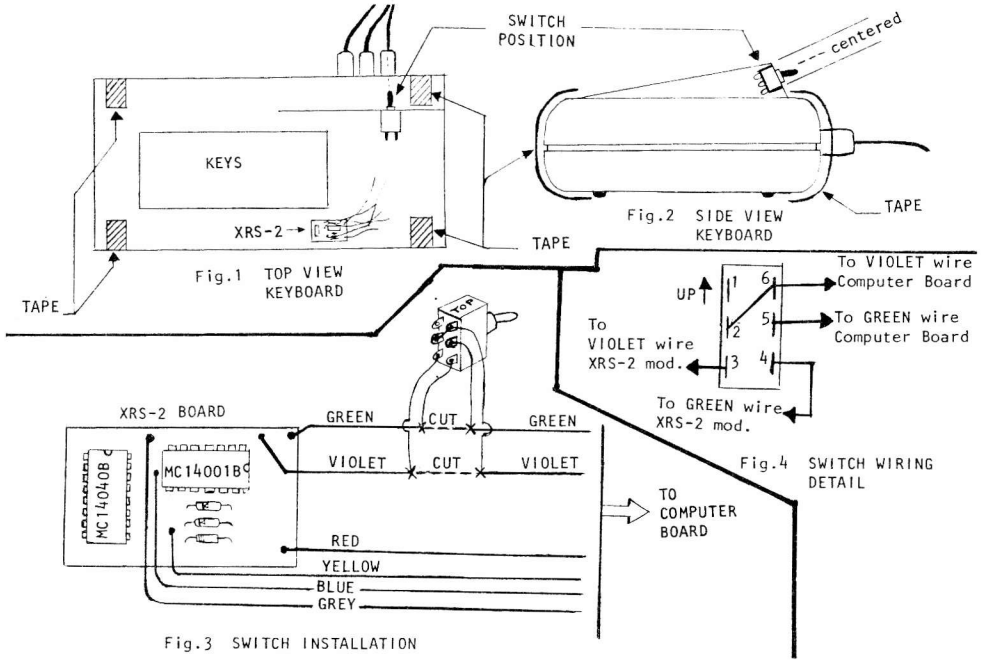

Fig.3 SWITCH INSTALLATION

IMPORTANT NOTES

Your B17DISK/BAS (version 3) operates at 3000 baud. Although version 3 is almost twice as fast as version 2, it is about 7% less reliable than version 2. We felt that this small amount of reduced reliability was acceptable because of the significant (77%) time-saving tradeoff obtained for your version 3.

Your TCP, included free, is version 2 which operates at 1700 baud. Because of the nature of the TCP (certifying tapes - not loading programs), its function is not enhanced any at 3000 baud.

Computer component tolerances, taken together, sometimes result in keyboards which are not successfully used with B17. Some machines function well at 3000 baud, some only at 1700 baud (and some do not work at all). Since the TCP is for finding tape defects, version 2 will let you determine if your machine will function better at 3000 baud or 1700 baud. If you find the version 2 will only work in your computer, return the tape requesting version 2 of the program.

* * * WARNING * * *

After the computer completes its I/O operation, IMMEDIATELY press the OFF key on your cassette recorder. If the PLAY -or- PLAY/RECORD key is left down for any length of time (even 30 seconds is sufficient) the cassette tape can be physically distorted by the recorder's capstan and pinch rollers. This crease or 'dimple' may prevent the cassette tape from being used reliably (at any baud). Your cassette tape must be intimately 'married' to a CLEAN, DEMAGNETIZED tape recorder head for optimum reliable operation. One bit of information (recorded at 1 7/8 inches/second) occupies about .00054" of space on tape - which is very small. It doesn't take much to 'miss a bit' and confuse the computer. This dimpling will interrupt good contact between the tape and the recorder head, frustrating you with loading problems. We also strongly recommend that you use 'virgin' tapes when you convert your files to B17-format.

B17DISK/BAS Operating Instructions

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Disk software has become very complex. We have made every effort to keep these instructions simple, letting you use this program almost immediately. To benefit most, please spend a few minutes reading these instructions first.

WHAT IS B17DISK/BAS ??

It is a Disk Basic program that lets you easily save any Disk file onto tape as a way to inexpensively backup selected files. B17DISK/BAS contains 2 machine-language programs in Data statements. They are: B17 -and- TCP.

Refer to the included sheet entitled: "Loading Instructions" now.

HOW TO USE B17.

When you use B17, you must set your NUMBER OF FILES = 1. B17 automatically sets your memory at 44000. When you RUN this program, the screen will clear and the following prompt will appear:

B17 -OR- TCP ?

Typing B to this prompt and pressing Enter enters the B17 mode of the program, letting you Save and Load any of your Disk files To/From cassette tape.

SPECIAL NOTE:

There is no record length uniformity for various DOS. Some use a 255-byte record length, while others use a 256-byte record length. Although this program will easily accomodate them, you may have to edit two values in the program. Two array variables: IN$(Ø) & IN$(1) are used to define the record buffer length. It comes to you initialized to a 256-byte record length (used by TRSDOS). If your DOS is using a 255-byte record length (used by Newdos, etc) you will get a FIELD OVERFLOW error message. To correct this problem, edit the line numbers 2200, 5200

from: OPEN "R",1,FL$:FIELD 1,128 AS IN$(Ø),128 AS IN$(1)
to: OPEN "R",1,FL$:FIELD 1,128 AS IN$(Ø),127 AS IN$(1)

After having selected the B17 portion of the program, the screen clears and:

ABS SUPPLIERS
------ B17 TAPE/DISK UTILITY ------
(R)EAD TAPE OR (W)RITE TAPE ?

prints. Selecting the (W)RITE TAPE option, the program asks for a filespec:

TYPE IN FILESPEC TO WRITE TO TAPE,
OR (D)IRECTORY <NEWDOS ONLY> ?

At this time, type in the filespec exactly as it appears in your Directory and press the Enter key. B17 will then save a copy of this file onto tape. Make sure your recorder is ready before pressing Enter. Note TRSDOS users do not use the (D)IRECTORY option. Unpredictable results can be expected if you do.

B17DISK/BAS uses a Visual Status Indicator (VSI) to indicate when B17 files are being (I)nput or (O)utput. The VSI appears in the Upper Right-hand corner of the screen with the "arrows" flowing in the direction of selected action. When completed, program then returns to: (R)EAD TAPE OR (W)RITE TAPE ?

If you want to read a file from tape previously saved by B17, type R to the above prompt. You will then be asked to:

```
TYPE IN FILESPEC TO READ FROM TAPE; OR,
 ENTER  TO READ THE NEXT TAPE FILE; OR,
(D)IRECTORY <NEWDOS ONLY>  ?
```

At this time, just pressing Enter will load the next file encountered on tape and transfer it to the diskette in drive Ø. If you respond with a filespec, B17 will Search for the file that you specified. Each filename will be printed on the screen as it is encountered. When the filespec is found, B17 will load the file into the computer and write it to the diskette in drive Ø.

A DISK FULL error message on a (R)EAD means there wasn't enougn space on your Diskette for the file. B17DISK/BAS will abort in this situation and revert back to the READY message. "Kill" this file on your diskette, then try a different diskette.

NOTE: B17DISK/BAS and B17 Tape Operating System formats are not interchangeable, nor are they interchangeable for DOS if the record lengths are different.

Because tape is a sequential media, it is advantageous to exercise good file management procedures. Among the items helpful would be: using your tape counter to keep track of the start & end of each file saved onto tape with at least 5 tape counter units between files on tape. Documenting what files are on tape (and where) will assist you in accessing them when you need them.

Although generally avoided, in the interest of the user some facts about tapes must be dwelled upon. There are many brands being sold and used by the computer community which are not reliable for computer use. These tapes contain creases, imperfections, inconsistencies in oxides, etc. Although they function adequately for Music, they fall short of the quality needed for computers - which will not tolerate these imperfections. At 500 baud these marginal tapes are less apt to cause problems that under B17-format, which writes your files on tape four times as dense. Because of this, your B17DISK/BAS also contains a Tape Certification Program (TCP) to establish the quality of any cassette tape. To use the TCP, it must be selected when the B17 OR TCP? prompt first appears. After typing TCP and pressing Enter, the screen will clear and the following is printed:

1. INSERT TAPE TO BE CERTIFIED INTO RECORDER
2. SET RECORDER TO RECORD
3. PRESS ENTER

NOTE: when doing this, you must be past the non-magnetic leader of the tape. After pressing the ENTER key, the following prompt appears:

TEST WRITE NOW IN PROGRESS
PRESS ENTER WHEN COMPLETE

There will be a 5-second pause, followed by the B17 Visual Status Indicator appearing on the screen with the 'arrows' flowing toward the (O)utput direction. What the TCP is doing is writing a repeatable sequence of numbers onto tape. After the recorder shuts off, or when you want to stop, press the Enter key. This will update the prompt shown below:

REWIND TAPE TO START OF TEST WRITE
SET RECORDER TO PLAY AND PRESS ENTER

This message is self-explanatory. Pressing Enter again will then display:

TEST READ NOW IN PROGRESS
PRESS ENTER TO RESTART AFTER INDICATOR APPEARS (refers to VSI)

The reverse process will occur with the VSI arrows flowing toward the (I) direction. If the tape is ok, the VSI will be continually active until the end-of-tape is reached. At this time the VSI will cease to flow. You must press ENTER before the end-of-tape is reached otherwise the TCP program will 'hang up'. If this occurs, rewind the tape a few inches and play it.

When you are in the TEST READ portion of the TCP, the program is reading the numbers that were written onto tape. It works similar to CLOAD? in concept. When the TCP does not 'see' what it expects on tape, the following message is printed onto the screen:

********** TAPE ERROR FOUND **********
PRESS ENTER TO RESTART

This means that the TCP didn't 'see' what it expected. This could mean a defect exists on the tape. If you look at the tape where it stopped, you'll see a wrinkle on the tape where the cassette shell housing window is. If this is true, then B17-formatted files cannot be successfully written on this part of tape with 100% success. In most cases, you'll have trouble with it at 500 baud too. To exit the TCP, press your reset button and reboot

THE CASSETTE MOD (referred to as XRX or X2X)

Radio Shack discovered (after producing thousands of Level 2 ROMs) that the cassette input timimg constants were in error. To minimize their loss, a hardware mod was installed which corrected this 'bug' in the ROM with a hardware 'patch'. Although it has merit, it will NOT allow B17-formatted files to load into your computer. If this mod is resident in your keyboard, you must install the switch outlined in the following Appendix A. This simple switch installation will allow you to switch the cassette mod in -or- out at will.

APPENDIX A — installing the XRS-2 cassette mod over-ride switch (MODEL-1 only)

The newer Level-2 keyboards have ROMs which have been corrected to eliminate the need for the XRS-2 cassette mod. This newer ROM can be identified when the TRS-80 computer is first turned on. MEM SIZE? is displayed on the screen. The older ROMs show MEMORY SIZE?.

B17 works directly with the newer ROM-fitted keyboards - as well as older keyboards without the cassette mod. Older keyboards with the mod in the keyboard will require a simple switch installation to allow the B17 to work at higher speeds. The instructions are easy to follow.

PARTS LIST: 1 - subminature DPDT switch (no center off). R/S #275-614 or equivalent.
4 - 10" insulated wires (remove 1/2" insulation from all ends)
Miscellaneous: solder, soldering iron, 1/4" drill bit, phillips screwdriver, tape.

SIMPLE STEP-BY-STEP INSTRUCTIONS (check off as you complete)

1. Remove all connectors from your keyboard and tape the keyboard top & bottom case together as shown (fig. 1, 2) with 4 pieces of 6" long tape (to prevent unintentional case separation). Now remove the 6 phillip screws from the bottom of the keyboard, noting that there are three lengths used - and where each are located when replaced. Turn the keyboard right side up and peel the tape from the TOP half of the case only.

2. Now remove the TOP half of the keyboard case and locate the XRS-2 mod. It has 6 different-colored wires going from it to the computer main board (fig. 1, 3).

3. Connect and solder three of the four 10" wires, one to each terminal (3,4,5) on the back of the switch. Take the fourth wire and strip an additional 1/2" insulation from one end. Connect this end to terminal 6 and also to terminal 2 (fig. 3, 4).

4. Drill a 1/4" hole in the TOP half of the keyboard case and mount the switch in the position shown (fig. 1, 2). Install the switch so the terminals on the back of the switch are vertical or are from top-to-bottom when mounted in the computer case.

5. Locate the GREEN & VIOLET wires coming from the XRS-2 mod. Cut them both in the middle (between the XRS-2 mod and the computer board) and strip 1/2" insulation from each of these ends.

6. Connect the wire coming from terminal 5 on the switch to the GREEN wire connected to the computer board. Solder this connection and insulate with a piece of tape.

7. Connect the wire coming from terminal 4 on the switch to the GREEN wire coming from the XRS-2 cassette mod. Solder and insulate this connection (see Fig. 3 & 4).

8. Connect the wire coming from terminal 3 on the switch to the VIOLET wire coming from the XRS-2 mod. Solder and insulate this connection (see Fig. 3 & 4).

9. Connect the wire coming from terminal 6 (also connected to terminal 2) on the switch to the VIOLET wire connected to the computer board. Also solder and insulate this connection.

10. Replace the keyboard TOP cover over the bottom half and tape it secure to the bottom half. Reinstall the 6 screws in the bottom of the case and connect the cables again. The switch is wired so that when it is in the DOWN position, B17-formatted code may be loaded in. With the sw itch in the UP position, the XRS-2 mod operates as it did before the switch installation.